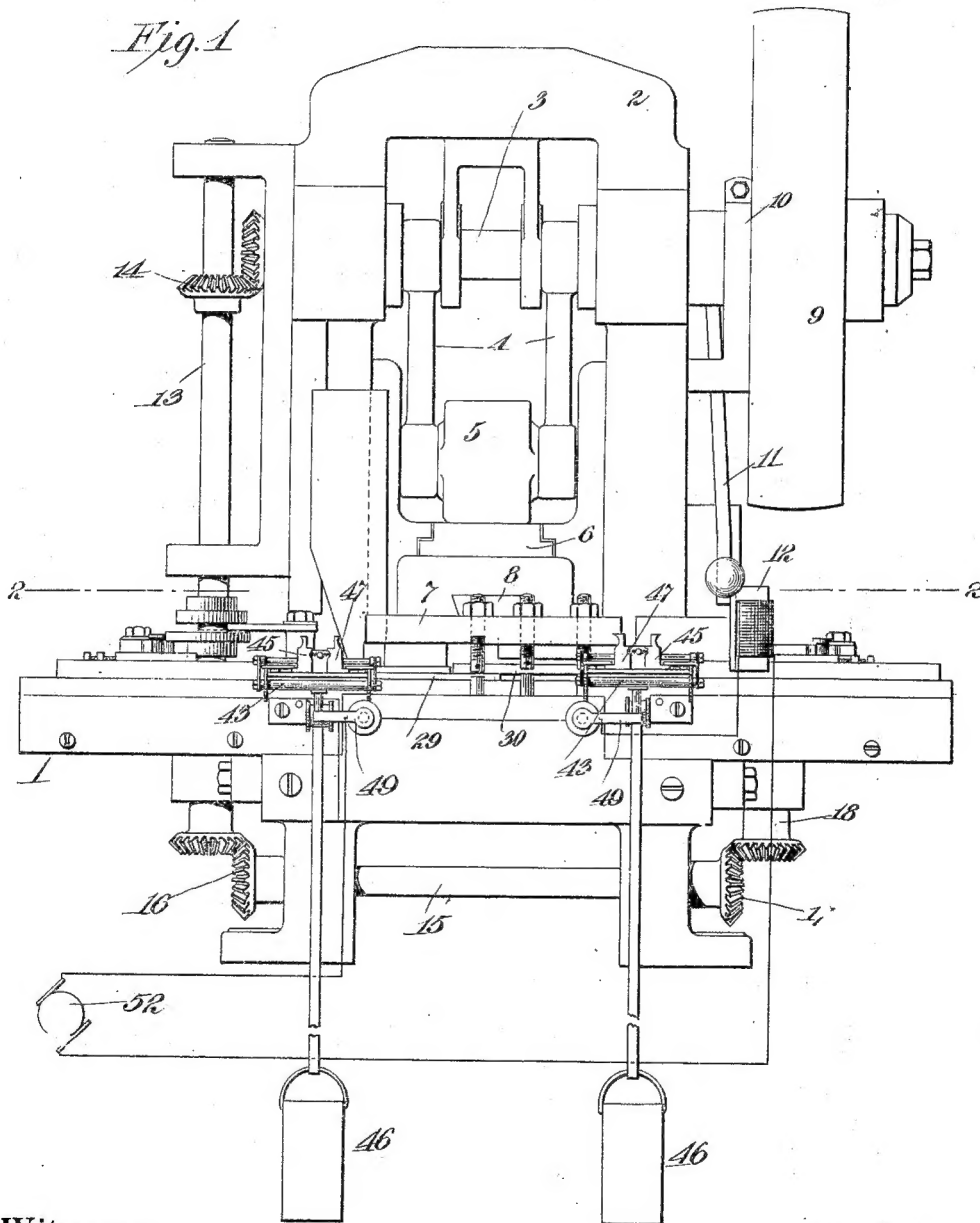


No. 813,491.

PATENTED FEB. 27, 1906.

T. A. EDISON.
POCKET FILLING MACHINE.
APPLICATION FILED MAY 16, 1905.

7 SHEETS—SHEET 1.



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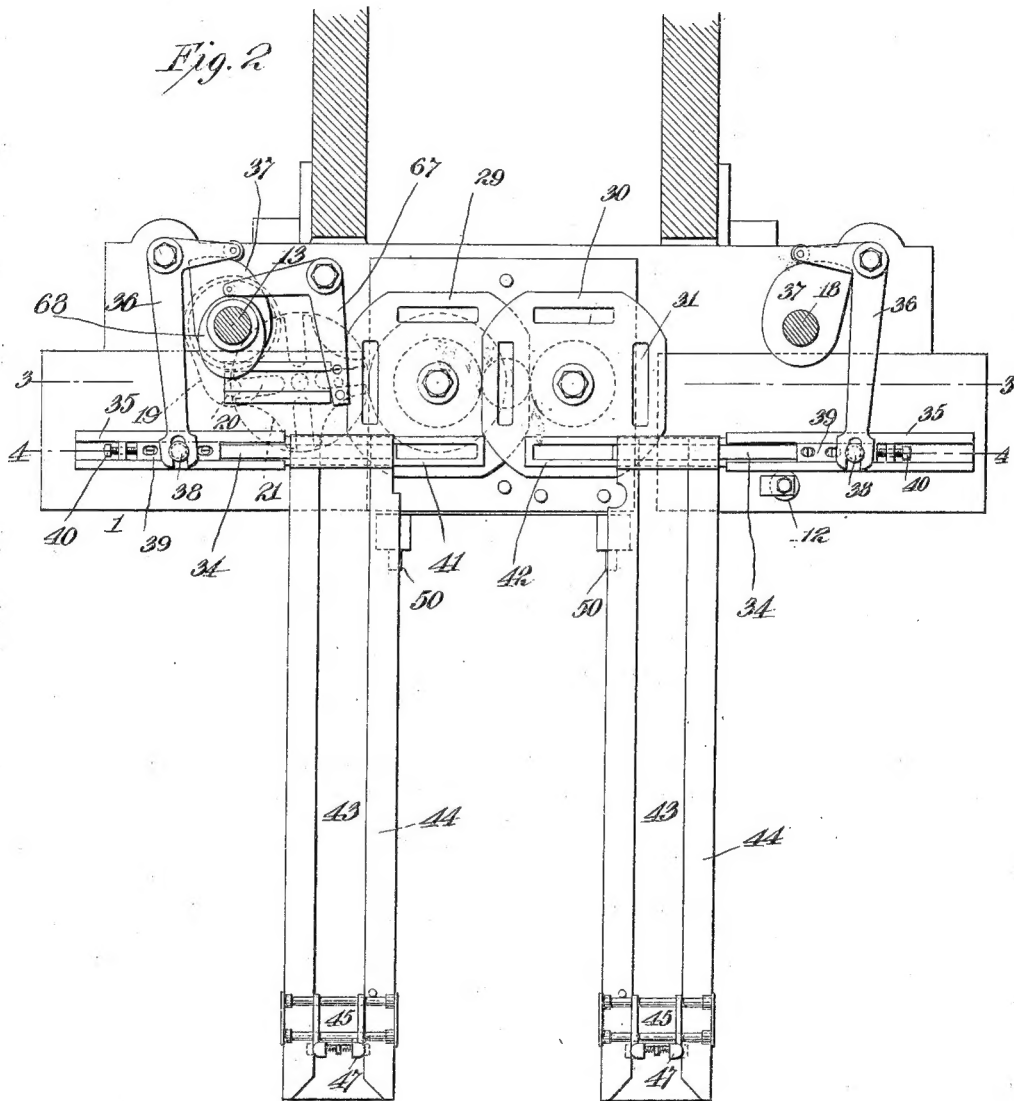
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7 SHEETS—SHEET 2.



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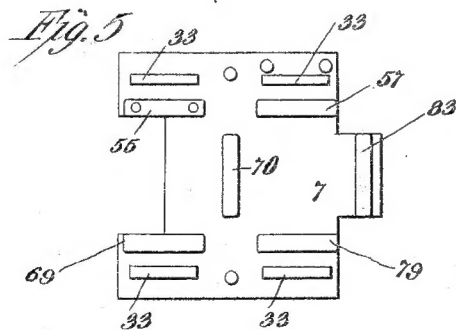
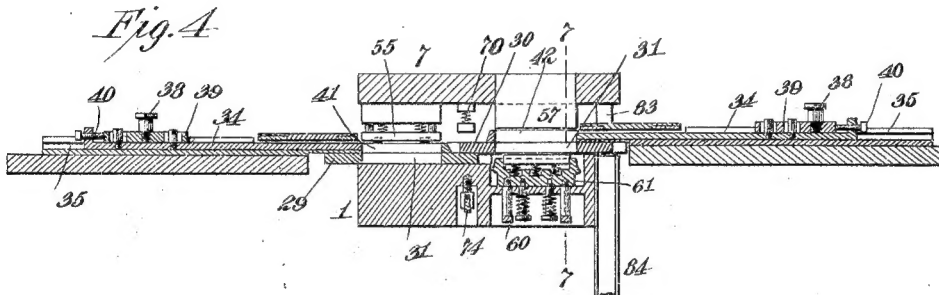
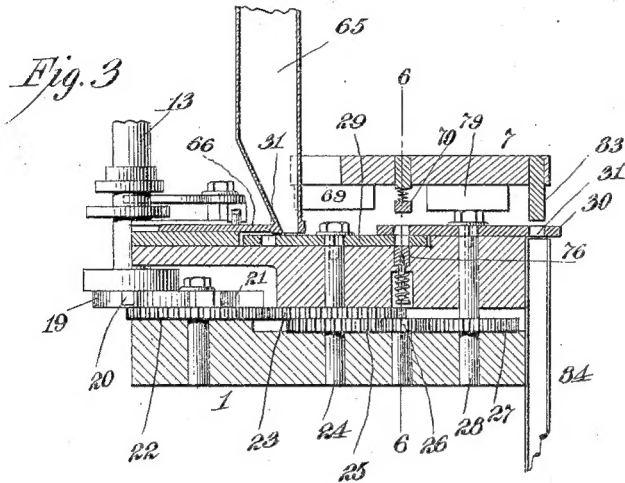
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7 SHEETS—SHEET 3.



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7 SHEETS—SHEET 4.

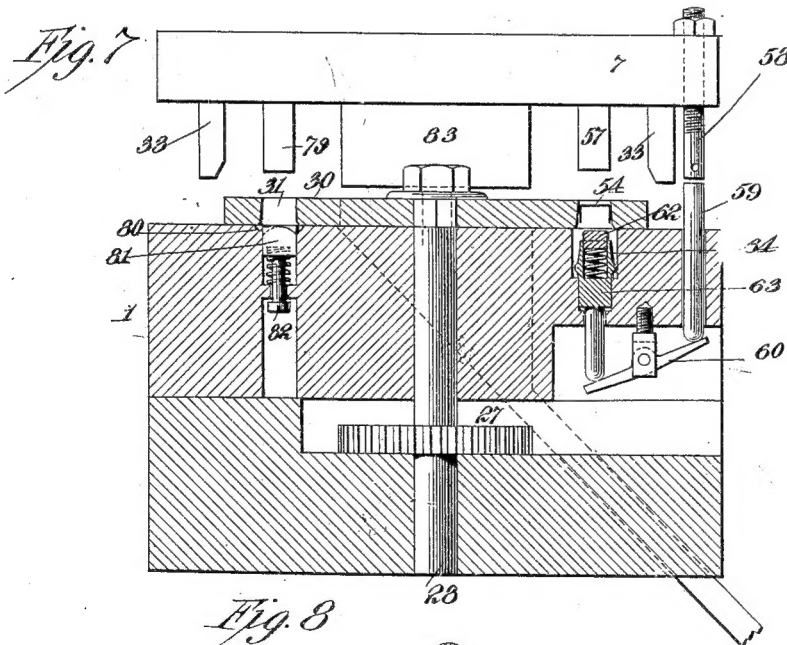
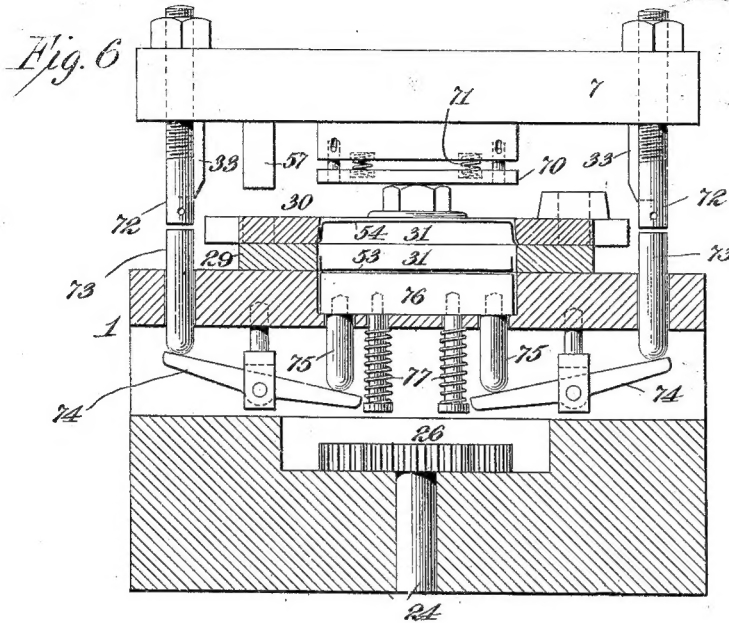
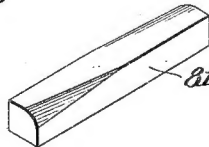


Fig. 8



Witnesses:

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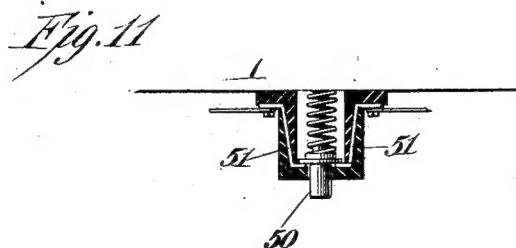
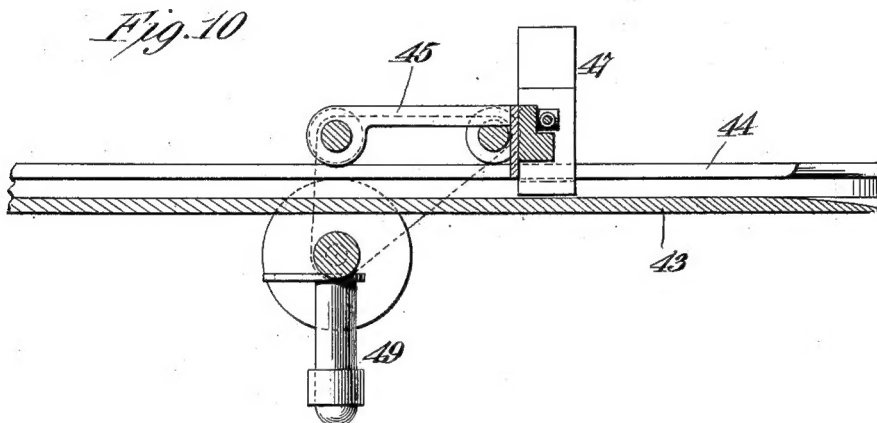
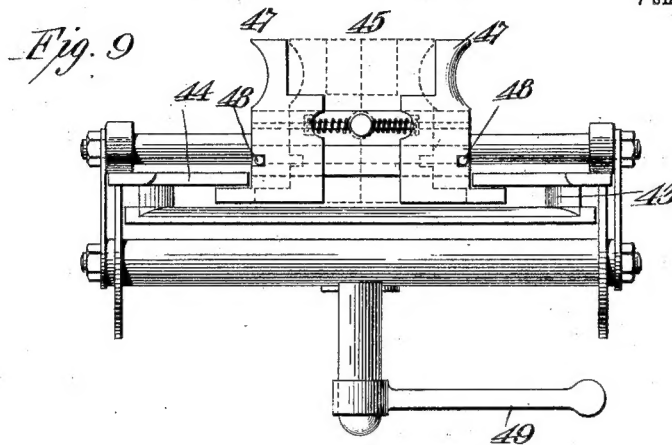
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APPLICATION FILED MAY 16, 1905.

7 SHEETS—SHEET 5.



Witnesses:

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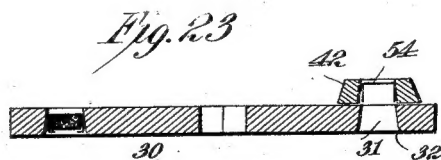
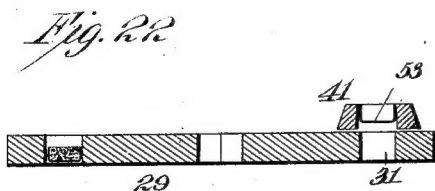
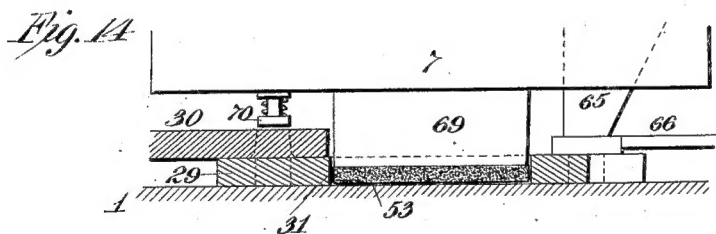
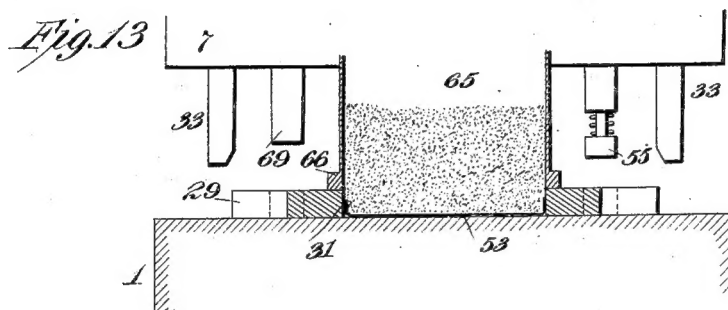
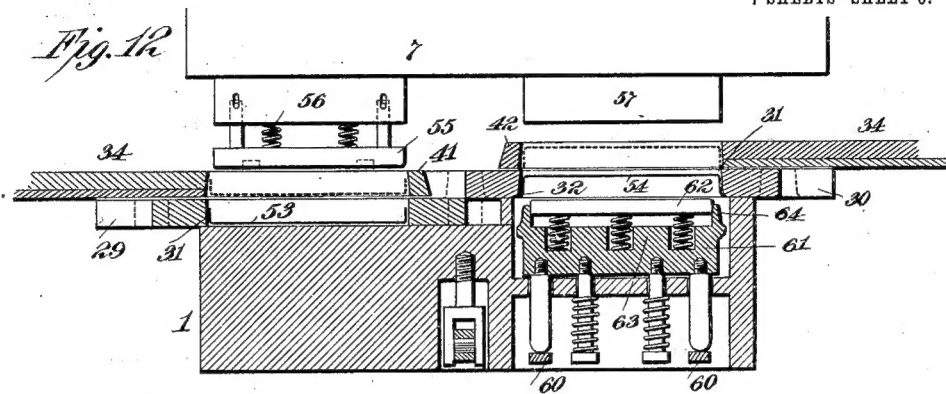
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No. 813,491.

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APPLICATION FILED MAY 16, 1905.

7 SHEETS—SHEET 6.



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T. A. EDISON.
POCKET FILLING MACHINE.
APPLICATION FILED MAY 16, 1905.

7 SHEETS—SHEET 7.

Fig. 15

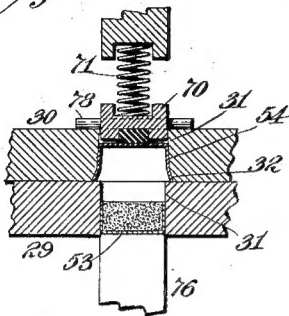


Fig. 16

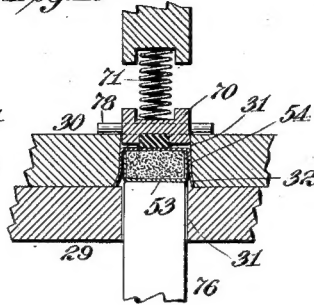


Fig. 17

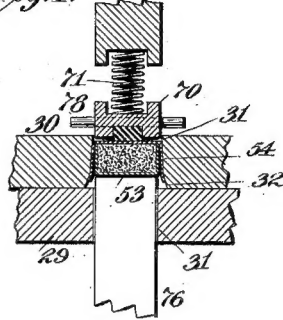


Fig. 18

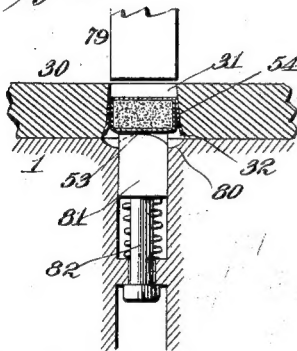


Fig. 19

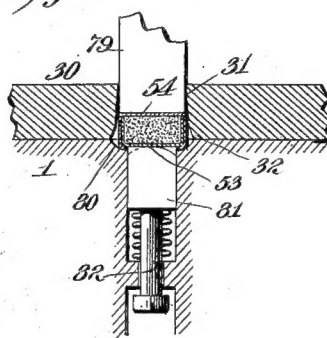


Fig. 20

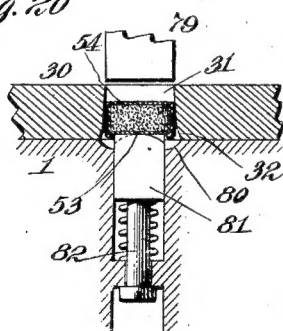
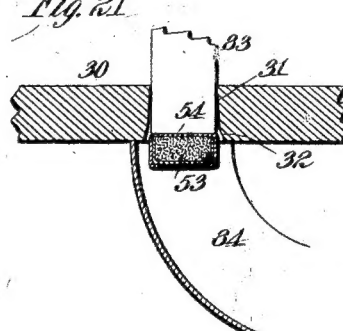


Fig. 21



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UNITED STATES PATENT OFFICE.

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POCKET-FILLING MACHINE.

No. 813,491.

Specification of Letters Patent.

Patented Feb. 27, 1906.

Application filed May 16, 1905. Serial No. 260,630.

To all whom it may concern:

Be it known that I, THOMAS ALVA EDISON, a citizen of the United States, residing at Llewellyn Park, Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Pocket-Filling Machines, of which the following is a description:

My invention relates to an improved machine which has been especially designed for the purpose of automatically introducing an electrolytically-active material in finely-divided condition or in the form of small briquets into the sectional metallic pockets which are utilized in the make-up of storage batteries of my improved type. With my improved battery each plate comprises a metallic grid having rectangular openings therein, and within each opening is introduced a small sectional pocket carrying the appropriate active material and held in position within the opening by being crimped around the edges of the latter. The pockets in question are formed of two telescopic cups of very thin sheet-steel carefully nickel-plated, so as to withstand electrolytic action in the alkaline solution.

My present invention provides an improved machine by means of which the active material may be introduced within one of these cups or sections and the two sections for each pocket then engaged and secured together. The machine is capable of performing its functions automatically, rapidly, and in a very superior manner, and the character of the machine is such that when once adjusted the same amount of active material within very close limits will be introduced into the successive pockets which may be turned out of the same.

While I have designed my improved machine with the particular purpose in view of filling the sectional pockets with active material for use in the make-up of storage batteries of my improved type, it will be understood that the invention is not limited to this particular use and that the apparatus may be applied in any art in which sectional pockets or analogous devices require to be filled or supplied with material in finely-divided condition or in the form of small solid briquets.

My object, generally stated, is to provide and produce a machine for the purpose which shall be simple and compact in construction and certain and effective in its operation.

Another object is to provide a machine wherein material in pulverulent condition is supplied to pockets or receptacles and in which the same amount of such material will be supplied at all times to the successive pockets or receptacles.

Another object is to provide a machine the operation of which will be automatically arrested when the supply of blanks to the same becomes exhausted. It will be evident that in effecting this object I make use of combinations of parts which are also capable of effective use in many arts, and so far as this part of my invention is concerned I do not limit myself to its use in the art of filling sectional pockets with finely-divided material or material in the form of briquets whether for subsequent use in connection with storage batteries or not.

In a broad sense the invention comprises two dials having suitably formed and arranged female dies therein, a plurality of male dies or punches cooperating therewith, and means for moving the dials intermittently, and means cooperating therewith for intermittently moving the two dials and for actuating the punches or dies during the moments of rest of the dials. The two cups which comprise a single pocket are simultaneously fed to the two dials, and in the movements of the latter the active material is introduced into one of the cups. The material is then tamped or compressed. The two cups or sections are then introduced together. One cup is then crimped or turned over on its edges upon the other, so as to hold the cups securely together, while at the same time compression is applied to the cup-sections to place the active material under the desired initial pressure, and finally the completed pocket or receptacle is ejected from the machine. It will be understood that these operations are taking place successively in the machine, one operation being performed on one cup or pocket simultaneously with the performance of a succeeding operation on another cup or pocket, whereby at each move-

ment of the dials and punches a complete filled pocket will be ejected from the machine.

The apparatus provides many details of construction and arrangement, some of which may be utilized in other arts than in the filling of pockets or receptacles, all as I shall hereinafter more fully describe and claim.

In order that the invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a front elevation of the complete machine, showing the electric circuits diagrammatically; Fig. 2, a horizontal cross-sectional view on the line 2 2 of Fig. 1; Fig. 3, a vertical sectional view on the line 3 3 of Fig. 2, showing the position of the dials and illustrating the punches or dies for introducing the two cup-sections together; Fig. 4, a vertical sectional view on the line 4 4 of Fig. 2, showing the first position of the dials in which the cup-sections are introduced therein and illustrating the slides for this purpose; Fig. 5, a bottom elevation of the upper dies or punches; Fig. 6, an enlarged view on the line 6 6 of Fig. 3, showing the dies and punches for introducing the cup-sections together; Fig. 7, a sectional view on the line 7 7 of Fig. 4, showing the dies for expanding the upper cups to facilitate the introduction of the lower cups therein and showing also the dies for applying pressure to the engaged sections and for crimping one section or cup over upon the other; Fig. 8, a separate perspective view of a part of the lower die shown in Fig. 7 for expanding the edges of the upper cup-sections; Fig. 9, a rear elevation of one of the chutes or holders for the blanks; Fig. 10, a longitudinal sectional view of the same; Fig. 11, a sectional view showing one of the circuit-breakers; Fig. 12, an enlarged sectional view through the two dials, showing in dotted lines the position of the two cup-sections before being introduced into the female dies and illustrating the dies for introducing these sections in the two dials and also the dies for expanding the edges of the upper cup-sections, so as to facilitate the introduction of the lower cup-sections therein; Fig. 13, an enlarged sectional view through the lower dial and filling-chute; Fig. 14, a corresponding sectional view through the lower dial, showing the tamping or pressing punch or die; Fig. 15, a greatly-enlarged sectional view through the two dials, showing the punches or dies for introducing the cup-sections together; Fig. 16, a corresponding view of the same parts, showing the sections engaged together; Fig. 17, a corresponding view illustrating the completion of the movements of the punches or dies for introducing the cup-sections together and showing the cup or pocket as a whole slightly raised from the position shown in Fig. 16;

Fig. 18, a sectional view, on a greatly-enlarged scale, through the upper dial, showing the pocket-sections engaged together and illustrating the dies for turning the edges of the upper sections over upon the bottom sections to hold the sections together; Fig. 19, a similar view showing the dies or punches in their extreme operative position for locking the cup-sections together; Fig. 20, a corresponding view with the dies moved to their withdrawn position and illustrating the complete pocket or receptacle in position in the upper dial; Fig. 21, a corresponding view through the upper dial, illustrating the punch for ejecting the complete pocket and showing also the exit-chute; Fig. 22, a cross-sectional view through the guide for the lower cups, along which the latter are moved before being brought into position to be engaged with the lower dial; and Fig. 23, a corresponding view of the guide for the upper cup and showing also the upper dial.

In all of the above views corresponding parts are represented by the same numerals of reference.

The machine is formed with a bed-plate 1, from which extends a frame 2, in which is mounted a shaft 3, having the usual cranks thereon, which are connected by the pitmen 4 with a cross-head 5, carrying a removable block 6, to which a punch-head 7 is secured by a tenon 8, all as is common in the art of punching-machines generally. A pulley-wheel 9 is loosely mounted on the shaft 3 and is adapted to be connected therewith by a clutch 10 of any suitable construction, operated by an arm 11, which is operated to open the clutch by an electromagnet 12. Keyed to the shaft 13 is an arm 19, having a pin 20; Figs. 2 and 3, at its end, which pin engages with the slots of a star-wheel 21 of common construction, whereby a continuous rotary movement of the shaft 13 will communicate an intermittent or step-by-step movement to said star-wheel. The star-wheel 21 carries a spur-gear 22, which meshes with and drives a spur-gear 23 on a shaft 24. Keyed to the shaft 24 is a spur-gear 25, driving a pinion 26, which meshes with a gear 27 on the shaft 28. Keyed to the shaft 24 is the lower dial 29, and keyed to the shaft 28 is the upper dial 30 the bed-plate 1 being cut away to receive the lower dial, as shown, whereby both dials will be practically supported by the bed-plate as they rotate. Each dial is essentially square in form, having rounded corners, and is provided with four female-die members 31, as shown, those for the lower dial having essentially vertical walls, while those for the upper dial are flared somewhat toward their lower ends and are formed with a cut-away or recess portion 32 (see Fig. 18, for example) to accommodate the flaring lower end of the upper cup-sections, as will be explained. The

vertically-reciprocating die-plate 7 is provided with four centering-dies 33, having beveled inner edges, as shown, and which engage the corresponding edges of the two dials before the dies or punches enter the same, so as to insure the exact centering of the dials after a feed movement thereof has taken place. The pocket-sections are fed to the two dials by means of two slides 34, working in ways 35 and connected to operating-levers 36, which are actuated by cams 37 on the shafts 13 and 18, respectively. In order that the slides 34 may be adjusted, I mount the pins 38, with which the levers 36 connect, on blocks 39, which are adjustable with respect to the slides, by means of adjusting-screws 40. (See Fig. 4.) In Fig. 2 I illustrate the two slides in an advanced position as takes place when they feed the pocket-sections to the dials. The slides may be withdrawn to their starting position in any suitable way, either positively or by a spring or weight. One of the slides moves the successive lower pocket-sections along a guide 41, located immediately above the lower dial 29 and shown in enlarged section in Fig. 22. The other slide moves the upper sections or cups for the pockets along a guide 42, located immediately above the upper dial and shown in enlarged section in Fig. 23. Both of the guides 41 and 42 are preferably provided with flaring walls, as shown, to facilitate the introduction of the cups into the two dials. The cups or blanks are held in the two magazines 43, having overturned edges 44, the blanks being located side by side therein, so that at each operation of the machine one of the blanks will be presented to each of the slides 34, so that when the slides are moved a blank from each magazine will be forced along the guides 41 and 42, as the case may be, into position over the two dials. The blanks or cup-sections are advanced along the magazines as they are removed one at a time from the front end of the column by means of a small carriage 45, bearing against the rear end of each column of blanks and actuated by a weight 46, as shown in Fig. 1. Each carriage is provided with two spring-pressed clips 47, engaging the pins 48, so as to be locked in position with the carriage, and which clips enter the magazines, so as to press against the blanks therein to advance the blanks toward the machine. (See Figs. 9 and 10.) By using the spring-clips 47 the latter may be removed so that a fresh supply of blanks may be introduced into any one of the magazines without necessitating the withdrawal of the carriage 45 to the extreme rear thereof. Each carriage 45 is provided with an arm 49, adapted to engage a pin 50 near the end of its forward movement toward the dial, so as to break an electric circuit between the contacts 51, Fig. 11. This circuit includes the magnet 12,

Fig. 1, and a suitable source of supply 52. In this way it will be seen that when the carriage of either magazine has moved so far toward the dial as to result in the exhaustion of the blanks therefrom the circuit to the magnet 12 will be broken, whereby the clutch-lever 11, which is normally attracted by that magnet, will be released, disengaging the pulley 9 from the shaft 3 and bringing the machine to rest. This automatic stopping of the machine takes place when the supply of blanks in either magazine becomes exhausted or is about to be exhausted, as will be understood. From what has already been said it will be seen that my machine is provided with two dials which are rotated by an intermittent or step-by-step movement and that provision is made to simultaneously advance the two blanks or cups from the two magazines into position above the two dials, a lower cup being moved into position above the lower dial and an upper cup being moved into position above the upper dial.

The machine is so organized and is provided with punches and dies of such a character that when these cup-sections have been moved into position above the two dials they will be moved into the corresponding pockets 31 thereof, the bottom section being simply forced into the bottom dial and the upper section being not only introduced into the upper dial, but in addition being engaged by a punch or die which flares or spreads its edges outwardly, so as to facilitate the introduction of the lower cup-section therein. When the dials move to the second or succeeding position, the operations described are repeated, new cup-sections being introduced to the dials, as explained. In the case of the lower cup-section previously introduced when the lower dial is in its second position a proper amount of the active material will be introduced into the same. In this second position of the dials the upper cup-section previously introduced therein will be brought into position over a previously-filled lower cup-section in the lower dial, and these cup-sections will then be introduced or engaged together, the lower section being forced upward into the upper section and both sections being then carried by the upper dial alone.

In the third position of the dials the operations already described will be repeated and a new operation takes place in connection with the lower cup, whose introduction into the lower dial has been described and which, it will be understood, is now filled with the active material. In this position of the lower dial the material in the lower cup will be packed or tamped therein, so as to facilitate the introduction of the lower cup into the upper cup. In this third position of the dials the two cup-sections which were engaged

together within the upper dial will be subjected to pressure, so as to compress the active material and place the same under the desired initial pressure, and simultaneously the edges of the upper cup-section will be turned over on the lower cup-section, so as to lock the sections rigidly together, and thereby complete the manufacture of the pockets or receptacles.

In the fourth position of the dials the lower cup in the lower dial, which is filled with the active materials and which has been compressed therein, as explained, will be brought into line with an upper cup in the upper dial, and the operations will be performed which were described in connection with the second position of the upper dial. In the fourth position of the upper dial the completed cup or receptacle therein will be ejected therefrom and will pass through a suitable conducting-chute out of the machine.

Thus it will be seen that certain operations are performed successively on the same pockets or pocket-sections and that different operations are performed simultaneously upon successive pockets or pocket-sections, whereby when the machine is in complete operation a finished pocket or receptacle will be ejected therefrom at each operation. The special punches or dies which are used will be best understood from reference to Figs. 12 to 21 of the drawings, which show them on an enlarged scale.

Referring first to Fig. 12, the two dials are shown in their first position. 53 represents one of the lower cup-sections, and 54 one of the upper cup-sections. When these cup-sections are used in connection with the manufacture of my improved storage batteries, they are formed of very thin sheet-steel, high in carbon, so as to be as elastic as possible, finely perforated and carefully plated with nickel, cobalt, or nickel-cobalt alloy, so as to withstand the effect of electrolysis in the alkaline solution. The upper cup-section 54 is somewhat deeper and slightly larger in its length and width than the bottom cup-section, so that the latter may freely enter the same. In the position shown in Fig. 12 one of the slides 34 will move the lower cup-section 53 to the position shown in dotted line. The other slide 34 will move the upper cup-section in the position shown in dotted line with respect to the upper dial 30. As the die-head 6 descends a die or punch 55, supported by springs 56, so as to be elastic, will enter the lower cup-section 53 and force the same into the female member 31 of the lower dial 29, as will be understood. Simultaneously a solid punch or die 57 will engage the upper cup-section, so as to introduce the same into the female member of the upper dial 30. Simultaneously a threaded rod 58 on the die-plate 7 engages a plunger 59,

working in the bed-plate 1, and whose lower end engages and tilts a lever 60, working in a cut-away portion in said bed, as shown, Fig. 7. The lever 60 actuates a two-part crimping or flaring die 61, one section of which, 62, enters the upper cup-section when the latter is forced into the upper dial, and the other section 63 being provided with a working edge 64, which engages the bottom edge of the upper cup-section, so as to flare the same outwardly, as shown in Fig. 12. The section 62 of the die 61 is spring-pressed, so as to be moved independently of the section 63 thereof.

It will be understood that these operations of introducing an upper cup-section into the dial and subsequently engaging a die with its bottom edge, so as to flare or spread the same outwardly, take place when the dials are in their first position of adjustment.

Following only the lower cup in its passage through the machine, the second position of the lower dial is shown in Fig. 13. Here the filling of the lower cup-section with the active material or other pulverulent substance takes place. The material is maintained in a chute or trough 65, located immediately over the lower dial, which trough at its lower end is carried by a plate 66, the latter being reciprocated by a lever 67, operated from a cam 68 on the shaft 13. (See Fig. 2.) At each feed movement of the machine the trough 65 will move from the position shown in Fig. 3 to a position over the opening 31 in the dial, so as to deposit material in the lower cup, after which the trough will be returned to its former position.

When the dials are moved to their third position, the lower dial will be entered by a tamping-die 69, Fig. 14, to pack the finely-divided active material in the lower cup-section, the latter being supported by the bed-plate 1, as will be seen. This tamping-die 69 may be either spring-pressed or positively operating.

In the fourth position of the lower dial the lower pocket containing the active material in a tamped or pressed condition will be brought into position below an upper pocket of the upper dial, it being understood that the fourth position of the lower dial corresponds with the second position of the upper dial. The operations which take place in this position of the dials are very clearly illustrated in Figs. 6, 15, 16, and 17, to which attention is now directed. The die-plate 7 carries a punch or die 70, supported by springs 71 and adapted to engage the upper cup-section in the upper dial in this position thereof. The die-plate is also provided with the adjustable pins 72, which are adapted to engage with plungers 73, working in the bed-plate 1, and which operate small levers 74, located in said bed. The free ends of the levers 74 en-

gage with pins 75, carried by a punch or die 76, which is adapted to take under the lower cup-section, so as to introduce the same into the upper cup-section. The die 76 is withdrawn to the position shown in Fig. 6 by means of springs 77, as shown. The downward movement of the punch or die 70 is limited by a pin 78, as shown in Figs. 15 to 17, inclusive. When the die-head descends, the die 70 will engage the upper pocket-section, and at the same time the die 76 will be positively elevated, so as to force the lower pocket-section or cup into the upper pocket-section, it being understood that the flaring edges of the latter facilitate this introduction. The extent of movement of the die 76 is such as will slightly elevate the two cup-sections when they are engaged together from the position shown in Fig. 16 to that shown in Fig. 17, whereby all possibility of the bottom edges of the upper cup-section engaging the lower dial will be overcome, thereby removing the possibility of obstruction from that cause. In the fourth position of the lower dial and in the second position of the upper dial corresponding therewith the lower pocket will be moved from the lower dial into the upper dial, so that hereinafter we shall trace the operations which take place upon the two cup-sections in the upper dial alone. These operations will be made more clear from a consideration of Figs. 18 to 20, inclusive, representing the upper dial in the third position of its adjustment. Here a solid die or punch 79 is carried by the die-plate 7 and engages the upper cup, so as to force the two cups downwardly. In the path of the upper cup-section curved crimping or beading edges 80 are formed, so that when the upper cup is forced downwardly its edge will engage the beading edge 80, so as to be turned, crimped, or rolled over upon the bottom cup-section. This operation is very clearly illustrated in Fig. 19. During this operation the bottom cup will be supported by a spring-pressed plunger 81, which yields slightly with the solid punch 79. When the solid punch 79 is again withdrawn, the plunger 81 will elevate the now completed pocket to the position shown in Fig. 20, so as not to interfere in any way with the rotation of the dials. In order that the spring-pressed plunger 81 may also not interfere with the rotation of the upper dial, the edges of this plunger are cut away, as shown in Fig. 8, so that as the upper dial rotates it will simply depress the plunger 81 slightly, as will be understood. The upward movement of the plunger 81 is limited by screws 82, which may be adjusted in the usual way. When the upper dial moves to its fourth position of adjustment, a solid punch 83 enters the same and forces the complete pocket or receptacle out of the upper dial in a receiving chute or trough 84, leading to any desired point.

I have already indicated generally the operation of the machine in describing the several parts thereof and the different position of the two dials with the operation of the punches coöperating therewith, so that a special restatement of such operation is not necessary to an understanding of the invention.

Having now described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In a machine of the class described, the combination of two movable carriers, arranged so that their paths of movement intersect, means for moving the carriers intermittently, means for introducing pocket-sections in the carriers, means for introducing material into one of the pocket-sections, and means for engaging the pocket-sections together at the point of intersection of the carriers, substantially as and for the purposes set forth.

2. In a machine of the class described, the combination of two rotatable carriers, arranged so that their paths of movement intersect, means for rotating the carriers intermittently, means for introducing pocket-sections in the carriers, means for introducing material into one of the pocket-sections, and means for engaging the pocket-sections together at the point of intersection of the carriers, substantially as set forth.

3. In a machine of the class described, the combination of two movable carriers, arranged so that their paths of movement intersect, means for rotating the carriers intermittently, means for introducing pocket-sections within the carriers, means for introducing material into one of the pocket-sections, means for introducing the pocket-sections together at the point of intersection, and means for applying pressure to the engaged sections to crimp the edges of one upon the other, substantially as set forth.

4. In a machine of the class described, the combination with two movable carriers, arranged so that their paths of movement intersect, means for rotating the carriers intermittently, means for introducing pocket-sections within the carriers, means for introducing material into one of the pocket-sections, means for introducing the pocket-sections together at the point of intersection, means for applying pressure to the engaged sections to crimp the edges of one upon the other and means for ejecting the finished pockets, substantially as and for the purposes set forth.

5. A machine of the class described, comprising in combination two movable carriers, arranged so that their paths of movement intersect, means for moving the carriers intermittently, means for introducing pocket-sections within the carriers, means for introducing material into one of said pocket-sections, means for tamping said material, and means

for introducing one pocket-section within the other at the point of intersection of the carriers, substantially as set forth.

6. A machine of the class described, comprising in combination two movable carriers, arranged so that their paths intersect, means for moving the said carriers intermittently, means for introducing pocket-sections within said carriers, means for introducing material within one of said pocket-sections, means for expanding or flaring the edges of the other pocket-sections, and means for introducing the filled pocket-sections within the expanded or flared pocket-sections at the point of intersection of the carriers, substantially as and for the purposes set forth.

7. A machine of the class described, comprising in combination two movable carriers, arranged so that their paths intersect, means for moving the said carriers intermittently, means for introducing pocket-sections within said carriers, means for introducing material within one of said pocket-sections, means for expanding or flaring the edges of the other pocket-sections, means for introducing the filled pocket-sections within the expanded or flared pocket-sections at the point of intersection of the carriers, and means for applying pressure to the flared sections to crimp their edges upon the filled sections, substantially as set forth.

8. A machine of the class described, comprising in combination two movable carriers, arranged so that their paths intersect, means for moving the said carriers intermittently, means for introducing pocket-sections within said carriers, means for introducing material within one of said pocket-sections, means for expanding or flaring the edges of the other pocket-sections, means for introducing the filled pocket-sections within the expanded or flared pocket-sections at the point of intersection of the carriers, means for applying pressure to the flared sections to crimp their edges upon the filled sections, and means for ejecting the finished pockets, substantially as set forth.

9. A machine of the class described, comprising in combination two rotatable carriers, arranged so that their paths of movement intersect, means for rotating the carriers intermittently, means for introducing pocket-sections within said carriers, means for introducing material in one of said pocket-sections and means for introducing the filled sections into the sections on the other carrier at the point of intersection of said carriers, substantially as set forth.

10. A machine of the class described, comprising in combination two rotatable carriers, arranged so that their paths of movement intersect, means for rotating the carriers intermittently, means for introducing pocket-sections within said carriers, means for intro-

ducing material in one of said pocket-sections, means for introducing the filled sections into the sections on the other carrier at the point of intersection of said carriers, and means for crimping the edges of the outer sections upon the inner sections to lock the sections together, substantially as set forth.

11. A machine of the class described, comprising in combination two rotatable carriers, arranged so that their paths of movement intersect, means for rotating the carriers intermittently, means for introducing pocket-sections within the carriers, means for introducing material in one of said sections, means for introducing the filled sections into the sections on the other carrier at the point of intersection of said carriers, means for crimping the edges of the outer sections upon the inner sections to lock the sections together, and means for ejecting the finished pockets, substantially as set forth.

12. In a machine of the class described, the combination with a rotatable carrier, a die for introducing pocket-sections therein, a power-shaft for operating said die, a clutch-lever controlling the application of power to said shaft, a magazine for containing the pocket-sections, a slide for moving the sections in said magazine, and means controlled by said slide to effect the operation of said clutch-lever when the magazine becomes emptied, substantially as set forth.

13. In a machine of the class described, the combination with a rotatable carrier, a die for introducing pocket-sections therein, a power-shaft for operating said die, a clutch-lever controlling the application of power to said shaft, a magazine for containing the pocket-sections, a slide for moving the sections in said magazine, a circuit-breaker actuated by said slide when the magazine becomes emptied and a magnet controlled by the circuit-breaker to effect the operation of the clutch-lever, substantially as and for the purposes set forth.

14. In a machine of the class described, the combination with a power-shaft and a clutch-lever for controlling the application of power to the same, a magazine for containing articles to be operated upon by power from the power-shaft, and an electromagnetic device controlled by the movement of the articles in the magazine for actuating the clutch-lever, substantially as set forth.

15. In a machine of the class described, the combination with a magazine, a slide movable therein, and spring-clips adapted to lock the slide in said magazine, but permitting longitudinal movement of said slide, substantially as set forth.

16. In a machine of the class described, the combination of two dials containing openings for receiving pocket-sections, gearing between said dials, a star-wheel for actuating

said gearing, a driving-shaft and a pin on said shaft engaging the star-wheel, substantially as set forth.

17. In a machine of the class described, the combination with a rotatable dial, and means for intermittently moving the same, of a slide for introducing pocket-sections within the dial, an arm for moving said slide, and means for adjusting the position of said arm relative to the slide, substantially as set forth.

18. In a machine of the class described, the combination with a rotatable dial having openings for receiving pocket-sections and means for intermittently moving the same, of a punch-head carrying a series of dies co-operating with the pocket-sections in said dial, and centering-dies carried by the punch-head for engaging the dial to center the same in its position of rest, substantially as set forth.

19. In a machine of the class described, the combination with a fixed bed, a dial mounted thereon and having openings adapted to receive pocket-sections, and means for moving the dial intermittently, of a slide adapted to align the pocket-sections with one of said openings when the dial is stationary, and a filling-die for engaging the pocket-section and introducing the same within the dial, substantially as set forth.

20. In a machine of the class described, the combination with a fixed bed, a dial mounted thereon and having openings adapted to receive pocket-sections, and means for moving the dial intermittently, of a slide adapted to align the pocket-sections with one of said openings when the dial is stationary, and a spring-pressed filling-die, for engaging the pocket-sections and introducing the same within the dial, substantially as set forth.

21. In a machine of the class described, the combination with a dial having openings for receiving pocket-sections and means for intermittently rotating the same, of a slide for moving the pocket-sections into alinement with one of said openings, a punch 57 for forcing the pocket-sections into said opening and an upsetting-die 61 with which said punch co-operates to flare the edges of the pocket-sections, substantially as set forth.

22. In a machine of the class described, the combination with a dial having openings for receiving pocket-sections and means for intermittently rotating the same, of a slide for moving the pocket-sections into alinement with one of said openings, a punch 57 for forcing the pocket-sections into said opening, an upsetting-die 61 with which said punch co-operates to flare the edges of the pocket-sections, and means for simultaneously moving said punch and upsetting-die, substantially as set forth.

23. In a machine of the class described, the combination with a dial having openings for receiving pocket-sections and means for in-

termittently rotating the same, of a slide for moving the pocket-sections into alinement with one of said openings, a punch 57 for forcing the pocket-sections into said opening and an upsetting-die 61 with which said punch co-operates to flare the edges of the pocket-sections, and a spring-pressed section within the upsetting-die for separating the pocket-section from the latter, substantially as set forth.

24. In a machine of the class described, the combination with a dial having openings for receiving pocket-sections and means for intermittently rotating the same, of means for introducing pocket-sections within said dial, means for introducing material within said pocket-sections, and a tamping-die for compressing the material within the pocket-sections during the periods of rest of the dial, substantially as set forth.

25. In a machine of the class described, the combination of two dials, arranged so that their paths intersect and having openings for containing pocket-sections, means for introducing pocket-sections within said dials, means for introducing material within the pocket-sections carried by one dial and a punch 76 for introducing the filled pocket-sections of one dial into the pocket-sections of the other dial at the point of intersection of the two dials, substantially as set forth.

26. In a machine of the class described, the combination of two dials, arranged so that their paths intersect and having openings for containing pocket-sections, means for introducing pocket-sections within said dials, means for introducing material within the pocket-sections carried by one dial, a punch 76 for introducing the filled pocket-sections of one dial into the pocket-sections of the other dial at the point of intersection of the two dials, and a spring-pressed die co-operating with said punch, whereby the pocket-sections will be compressed between the punch and die, substantially as set forth.

27. In a machine of the class described, the combination of two dials, arranged so that their paths intersect and having openings for containing pocket-sections, means for introducing pocket-sections within said dials, means for introducing material within the pocket-sections carried by one dial, a punch 76 for introducing the filled pocket-sections of one dial into the pocket-sections of the other dial at the point of intersection of the two dials, a spring-pressed die co-operating with said punch, whereby the pocket-sections will be compressed between the punch and die and means for simultaneously operating the punch and die, substantially as set forth.

28. In a machine of the class described, the combination with a dial having openings for receiving telescoped pocket-sections, and means for intermittently moving the same, of a crimping-punch arranged to engage the tel-

escaped sections within the dial, a crimping-
die against which sections are forced by said
punch to crimp the edges of one section upon
the other, and a spring-pressed plunger coöp-
5 erating with the said punch to return the
pocket-sections as the punch is withdrawn,
substantially as set forth.

This specification signed and witnessed this
15th day of May, 1905.

THOS. A. EDISON.

Witnesses:

FRANK L. DYER,
ANNA R. KLEHM.